SELF-SERVICE TECHNOLOGY AND THE MODERATING EFFECTS OF CONSUMER CHARACTERISTICS

AMANDA BEATSON

Author's affiliations: Dr Amanda Beatson, School of Advertising, Marketing and Public Relations, Queensland University of Technology, 4001, Australia, Tel: 617 3864 2471, Fax: 617 3864 1811, E-mail: a.beatson@qut.edu.au.

Key Words: Self-service technology, affective commitment, overall satisfaction, transaction-specific satisfaction, moderators

SELF-SERVICE TECHNOLOGY AND THE MODERATING EFFECTS OF CONSUMER CHARACTERISTICS

Abstract

The incidence of self-service technology, where the consumer delivers the service themselves using technology, is increasing in the service encounter. The majority of research into the service encounter has explored the more traditional encounter, that involving the consumer and a service provider. Consequently, there is still a great deal unknown about self-service technology. One area that is under explored is the potential impact of self-service technology on consumer satisfaction and affective commitment. Previous research into the service encounter has highlighted the importance of personal service in these outcomes. The question raised, therefore, is what is the potential impact on these outcomes when self-service technology is then introduced? Accordingly, this paper presents a framework and empirical study for increasing our comprehension of this research area. In addition to direct effects between satisfaction with personal service and self-service technology, overall satisfaction and affective commitment, a series of moderating effects focusing on consumer characteristics are also investigated in this study. The results highlight the importance of personal service for evaluations of satisfaction and commitment and also highlight the importance of social competency as a moderator in this relationship. By understanding consumer perceptions of self-service technology in the service encounter service organizations will be better placed to develop strategies to deliver the services expected by their consumers with the overall aim to improve consumer satisfaction and commitment.

Introduction

The use of technology is altering traditional business and marketing practices. One application that is having a substantial impact on traditional methods of business and the strategies undertaken by organizations is self-service technology within service industries. Self-service technologies are technological interfaces that allow consumers to produce services independent of direct involvement from service staff (Meuter, Ostrom, Roundtree and Bitner, 2000). Currently, self-service technologies can be found in banks (automatic teller machines), airlines (self-service boarding pass dispensers), petrol stations (pay-at-the-pump facilities), supermarkets (self-scan and pay systems), and hotels (automated check-in and check-out facilities) among others. The introduction of self-service technology [SST] is altering conventional service encounters (where the customer interacts with the service firm) as it reduces personal interactions between front-line service employees and consumers (Curran, Meuter and Suprenant, 2003). These personal interactions during service encounters have been identified as important to evaluations of consumer satisfaction and consumer commitment (Bitner, Brown and Meuter, 2000; Czepiel, 1990).

Given the value of consumer satisfaction and consumer commitment for service organizations, it is essential that the relationship between self-service technology and these dimensions is understood. The link between self-service technology and consumer commitment and consumer satisfaction has therefore been highlighted as an area in need of further investigation (Meuter et al., 2000; Parasuraman and Grewal, 2000). This is particularly pertinent given that continual increases in technological

developments are likely to make self-service technology even more prolific than it already is. As organizations are investing a great deal of time and effort into self-service technology, it is important that they understand the consumer's perspective on this and what type of implication this has for the consumer's experience of the service.

Consequently, this paper presents a framework for investigating the relative impact of self-service technology on consumer satisfaction and consumer commitment. Additionally, the relationship is explored between two levels of consumer satisfaction (overall and transaction-specific) and consumer commitment. Very few empirical papers have investigated the relationship between the two levels of satisfaction and, in particular, their connection with consumer commitment (Jones and Suh, 2000). Furthermore, transaction-specific satisfaction has previously only been investigated with regard to personal service, not with regard to self-service technology. This is the first framework that captures transaction-specific satisfaction as it pertains to self-service technology.

To facilitate a more comprehensive understanding of the impact of self-service technology, a number of possible moderating effects are also explored in this framework. Moderating effects can often be particularly meaningful for understanding a research area (Dabholkar and Bagozzi, 2002). In this context it is expected that several moderating effects may be pertinent. These include social competency, technology competency, preference for personal service, and preference for self-service technology (Cohen and Waugh, 1989; Dabholkar, 1996; Heinssen, Glass and Knight, 1987; Riggio, 1986).

The paper is presented in the following manner. First is the conceptual framework which includes hypothesis development and the conceptual model. The conceptual framework section below includes literature on consumer satisfaction, affective commitment and the moderating effects. The empirical study which tests the conceptual model is then outlined and the results presented. A discussion of these results then follows with conclusions drawn for management and limitations of the study and future research areas highlighted.

Conceptual Framework

Consumer satisfaction and consumer commitment are particularly important for service organizations because of the inherent characteristics of services such as their intangibility (Singh, 1991; Szymanski and Henard, 2001). The service encounter therefore becomes the key factor in evaluating the organization (Zeithaml, 1981). Previous research relates consumer satisfaction with consumer commitment (for example, Churchill and Suprenant, 1982; Payne and Rickard, 1993). Payne and Rickard (1993) state that the more satisfied consumers are, the more likely they will be committed to the organization, hence improving organizational profitability (Payne and Rickard, 1993).

Consumer satisfaction is conceptualized in the extant literature as: overall satisfaction (or cumulative satisfaction) and transaction-specific satisfaction (Anderson, Fornell and Lehmann, 1994; Jones and Suh, 2000). Previous research has tended to measure satisfaction either as a transaction-specific assessment (for example, Bitner, 1990) or

an overall satisfaction assessment (for instance, Anderson, Fornell and Lehmann, 1994; Cronin and Taylor, 1992). Few studies have investigated both dimensions simultaneously along side investigations into consumer retention. Jones and Suh (2000) is an exception, however their study only investigated delivery using personal service. Hence, the conceptual framework in the current study is the first to propose a relationship between two service delivery methods (self-service technology and personal service) with regard to transaction specific satisfaction, overall satisfaction and consumer commitment. The framework proposed in this paper is presented diagrammatically in Figure 1.

INSERT FIGURE 1. ABOUT HERE

Overall satisfaction is the customer's assessment of their total overall service experience and is defined as an affective state (or overall emotional reaction) to a service experience (Giese and Cote, 2000; Spreng et al., 1996). Overall satisfaction is relatively stable over time and is similar to an enduring attitude or predisposition (Parasuraman et al., 1994). As a result overall satisfaction is believed to be a valuable indicator of the organization's performance (Anderson, Fornell and Lehmann, 1994). Individual elements of the service experience are captured by transaction-specific satisfaction (Jones and Suh, 2000; Spreng et al., 1996). Transaction-specific service components represent elements such as specific service encounters, and also the service-delivery mode. Qualitative research by Bitner and Hubbert (1994) reveals that consumers view overall satisfaction and transaction-specific satisfaction differently, thus suggesting that they are distinct concepts.

Assessing satisfaction at two levels has advantages. While overall satisfaction is very valuable for gaining a general assessment of the service experience, it does not enable investigation into separate elements of the service delivery. Generally the consumer may be satisfied, however there may be elements of the service which they are not pleased with such as speed of service delivery or friendliness of service staff. An investigation into these separate elements will highlight these shortcomings in the service and enable an organization to focus on key elements in an effort to increase overall satisfaction.

Two particular categories of transaction-specific satisfaction are critical to this conceptual framework, self-service technology satisfaction, and personal service satisfaction. Self-service technology satisfaction reflects consumers' satisfaction with the organization's self-service technology facilities, independent of human interaction. These evaluative judgments could follow the use of automated check-out facilities in a hotel or internet banking. The individual interactions that the consumer has with self-service technology are thought to influence overall satisfaction. This is drawn from personal service satisfaction literature (Jones and Suh, 2000). The self-service technology transactions represent components of the total service experience, with overall satisfaction representing the global evaluation of the service experience (Jones and Suh, 2000). Because overall satisfaction is a cumulative evaluation, it stands to reason that it will be directly influenced by the experiences the consumer has with the service delivery components, in this instance, self-service technology. It is expected that the interactions the consumer has with the self-service technology facilities when they are delivering the service themselves will contribute toward their overall evaluation of the service experience. If the interaction the consumer has with

self-service technology is favorable, for example, it was easy to use and delivered the service they requested in the time they expected it to do so, it is likely this positive interaction will be a factor in their overall evaluation of the service experience. Therefore, the following relationship is predicted:

> *Hypothesis, 1*: Self-service technology satisfaction will have a positive influence on overall satisfaction.

A second form of transaction-specific satisfaction explored here is personal service satisfaction. Personal service satisfaction reflects consumers' satisfaction with the organization's service employees and like self-service technology satisfaction represents a component of the total service experience. Satisfaction with personal service is especially relevant in traditional service-delivery settings where service staff often become the key evaluative dimension of the service experience (Bitner, 1990). Relationships have been found to exist between satisfaction with personal service and overall satisfaction (Jones and Suh, 2000). It is reasonable to expect that when the consumer makes judgments about the personal service they receive, these judgments will play a part in their assessment of the overall service experience. For example, if the consumer receives poor service from the front-line employees, such as rude or disinterested staff, it is likely that this negative assessment will contribute toward their overall experience with the service organization. As overall satisfaction is a cumulative judgement, it is proposed that this will be influenced by personal service satisfaction. Hence;

Hypothesis 2: Personal service satisfaction will have a positive influence on overall satisfaction.

Consumer satisfaction has consequences for the organization at two levels of the firm. At the customer or market level the consequences include word-of-mouth behaviors including complaint behavior (for example, Bitner and Hubbert, 1994; Dabholkar and Thorpe, 1994), repurchase intentions and consumer commitment (for example, Dabholkar and Thorpe, 1994; McQuitty et al., 2000, Mittal and Lassar, 1998). At the organizational level the consequences are profitability (for example, Bernhardt, Donthu and Kennett, 2000).

Research indicates that consumer satisfaction is linked to consumer commitment (for example, Churchill and Suprenant, 1982). Payne and Rickard (1993) state that the more satisfied consumers are the more likely they will be committed to the organization. Additionally, in a meta-analysis of past studies Szymanski and Henard (2001) concluded that satisfaction has a strong association with commitment. Studies which have found this relationship include Hennig-Thurau and Klee (1997); McQuitty et al. (2000); Mittal et al. (1998); Singh and Sirdeshmukh (2000); and Spreng et al. (1996).

In this current framework, commitment is conceptualized as a one-dimensional construct labeled affective commitment. A one-dimensional construct for consumer commitment is used most frequently in marketing studies as this one dimensional approach provides a simple, interpretable measure of commitment (Bloemer and Odekerken-Schröder, 2003). Where consumer commitment is conceptualized as a

one-dimensional construct, affective commitment is often used to capture it. Bloemer and Odekerken-Schröder (2003), Beatty, Kahle and Homer (1988), Morgan and Hunt (1994) and Mackenzie, Podsakoff and Ahearne (1998) all focus on affective commitment. Affective commitment is the most frequently captured commitment dimension in both consumer and organizational behavior research and is defined as a desire to continue a relationship with an organization because of a liking or an emotional attachment toward the organization (Allen and Meyer, 1990; Garbarino and Johnson, 1999). This is termed a positive affect or emotion, and is often referred to as a psychological attachment (Garbarino and Johnson, 1999). This affective response is seen in both the literature on commitment and loyalty (Dick and Basu, 1994; Hartline, Maxham and McKee, 2000; Oliver, 1999).

Past research has identified a relationship between overall satisfaction and affective commitment. In a marketing context, Gruen, Summers and Acito (2000) found that affective commitment was built on a series of satisfactory exchanges. Garbarino and Johnson (1999) also found a relationship between overall satisfaction and affective commitment. Whereas Allen and Meyer (1990) identified a relationship between employee satisfaction and affective commitment to the organization and Johlke, Duhan, Howell and Wilkes (2000) indicate a relationship between job satisfaction and affective commitment.

It is reasonable to assume therefore that a relationship will exist between overall satisfaction and affective commitment in the current research setting. It seems logical that when the consumer is satisfied overall with the service experience, they are likely to have positive feelings toward the organization and wish to return to the

organization. In other words, should they view the overall experience they have with the service organization favorably, the consumer is likely to want to continue to return to that organization should they want the service again. Consequently, it is proposed that;

> *Hypothesis 3*: Overall satisfaction will have a positive influence on affective commitment.

In line with previous research on self-service technology consumer characteristics are considered to moderate the relationships proposed in this current consumer framework (Dabholkar and Bagozzi, 2002; van Birgelen, de Ruyter, de Jong and Wetzels, 2002). The different characteristics that consumers bring to service encounters are likely to influence the way these encounters are evaluated (Parasuraman and Grewal, 2000). For this reason, four moderators are proposed. These consumer characteristics are: social competency; technology competency; preference for personal service; and preference for self-service technology (Cohen and Waugh, 1989; Dabholkar, 1996; Heinssen, Glass and Knight, 1987; Riggio, 1986). It is proposed that these moderating variables will influence the relationships between self-service technology satisfaction and personal service satisfaction, overall satisfaction and affective commitment. These consumer characteristics are discussed below.

Social competency. Social competency is defined as the consumer's willingness and ability to engage others in a social context (Riggio, 1986). There are widespread individual differences in perceived social competencies, and these competencies have

a consequence on the manner in which people interact with others and the degree of social contact they seek (Flett, Hewitt and De Rossa, 1996). Social competencies take a 'trait' approach, whereby they are relatively enduring dispositional characteristics (Riggio, Throckmorton and DePaol, 1990). People who have high social competencies are able to initiate conversations with others and can often appear gregarious and outgoing (Riggio, 1986). It is proposed that social competency changes the form of the relationships in the current conceptual framework in different ways.

It is expected that the more comfortable a consumer is with other people the higher their expectations of their dealings with them. Therefore it is proposed that the relationship between personal service satisfaction and overall satisfaction is likely to be strengthened for consumers with higher social competency. Consumers with high social competency are comfortable interacting with others and will have high expectations of their interactions with service employees. Thus, those consumers expect a positive experience with service employees and therefore these positive experiences will contribute toward their feelings of overall satisfaction. It is proposed therefore, that the relationship between personal service satisfaction and overall satisfaction would be strengthened with high social competency (see Hypothesis 4a).

Furthermore, the relationship between self-service technology satisfaction and overall satisfaction is likely to be weaker for consumers who have high social competency. These consumers value their interactions with other people more than with technologies. Thus, a positive experience with self-service technology for consumers high in social competency is likely to have little impact on their satisfaction ratings.

Although the self-service technology may have delivered the service appropriately, those consumers high in social competencies are more likely to seek out interactions with other people as these are more important to them, therefore the positive self-service technology assessment is not central to them. Hence, it is proposed that the relationship between self-service technology satisfaction and overall satisfaction would be weakened for consumers with higher social competency (see Hypothesis 4b).

Additionally, the relationship between overall satisfaction and affective commitment is likely to be stronger for those consumers who have higher social competency, as those consumers are likely to want to form a relationship and seek social benefits with the organization (Gwinner, Gremler and Bitner, 1998). It stands to reason that if a consumer is satisfied with the service organization they are likely to want to continue to return to that organization. By returning, the consumer is engaging in a relationship with the service provider. This relationship is likely to be more important to consumers more comfortable in dealing with other people, in other words those with higher social competency. Hence, the association between personal service satisfaction and overall satisfaction would be strengthened with higher social competency (see Hypothesis 4c).

Hypothesis 4: With higher social competency,

(a) The positive relationship between personal service satisfaction and overall satisfaction will be strengthened,

(b) The positive relationship between self-service technology satisfaction and overall satisfaction will be attenuated, and

(c) The positive relationship between overall satisfaction and affective commitment will be strengthened.

Technology competency. Technology competency is defined as the consumer's perceptions of their comfort with technology in general and is similar in conceptualization to technology anxiety (Cohen and Waugh, 1989; Heinssen et al., 1987). Meuter and Bitner (1997) found that technology anxiety was useful in discriminating between heavy and light users of self-service technology. Additionally, Meuter, Ostrom, Bitner and Roundtree (2003) found that technology anxiety was a better predictor of self-service technology usage than demographic characteristics, including age and gender. It was also determined that as technology anxiety drops, usage of self-service technology increases. Furthermore, technology competency also influences the experience of using a self-service technology option. That is, a satisfying experience coupled with low technology competency, resulted in a more satisfying experience, a greater chance of repeat usage of the same self-service technology in the future, and increased possibility of positive word of mouth (Meuter et al., 2003). The consumer's attitude toward technological products in general has been explored in other self-service technology studies including Dabholkar (1996) who found that a positive attitude toward using technological products was found to have a positive impact on evaluations (service quality) of self-service technology options.

With this other research in mind, it can be argued that technology competency will moderate the direct effects between satisfaction with personal service and overall satisfaction, and satisfaction with self-service technology and overall satisfaction.

However it is proposed that technology competency changes the form of the relationships in the conceptual framework in different ways. It is predicted that the positive relationship between satisfaction with personal service and overall satisfaction is weaker for consumers who are more competent with technology. That is, those consumers who are more competent with technology are very comfortable with the non-personal aspect of technology, therefore; when they have a successful interaction with a person during a service encounter it has little impact on their overall satisfaction levels. It is likely that those consumers more comfortable with the technology are happier when the service is delivered via technology, therefore when it is delivered by a person, it does not contribute to their overall evaluation of the service a great deal. In other words, for those consumers who have higher technology competency, the positive relationship between personal service satisfaction and overall satisfaction would be weakened (see Hypothesis 5a).

Additionally, for those consumers who are more competent with technology, a favorable interaction with self-service technology will contribute a great deal to their overall evaluation of the service experience as the technology is particularly important to them. This reaction will occur because consumers who feel comfortable with technology will have high expectations for their interaction with self-service technology. Accordingly, therefore, when they have a successful interaction, this is likely to have a strong impact on their satisfaction ratings as this is what they will expect from their interaction. Consequently, it is proposed that for those consumers who have high technology competency the positive relationship between self-service technology satisfaction and overall satisfaction would be strengthened (see Hypothesis 5b).

Hypothesis 5: With higher levels of technology competency,

(a) The positive relationship between satisfaction with personal service and overall satisfaction will be attenuated, and

(b) The positive relationship between self-service technology satisfaction and overall satisfaction will be stronger.

The next two sets of moderating hypotheses focus on the consumer's preference for a specific service delivery mode during the service encounter, that is, preference for personal service and preference for self-service technology. Preference for personal service focuses on the consumer's want to have the service delivered via a human service provider. This construct is modeled on Dabholkar's need for interaction construct (Dabholkar, 1996; Dabholkar and Bagozzi, 2002). Need for interaction refers to the need some consumers feel for interacting with a service employee during a service encounter. The construct preference for personal service in the current study is defined conceptually as the same. However it has been renamed for clarity along with the additional construct, preference for self-service technology.

Traditionally, service encounters have involved an interaction between the customer and the service provider (Czepiel, 1990). The social outcome of this interpersonal interaction is one of the key benefits the consumer derives from having a long-term relationship with a service organization (Gwinner et al., 1998). The use of self-service technology reduces the interpersonal interaction in the service encounter, which can make the use of self-service technology facilities unappealing (Meuter,

1999). It has been suggested, nevertheless, that some consumers choose self-service technology options so as to avoid interpersonal interactions (Meuter et al., 1999).

Preference for interaction has been investigated previously with self-service technology research. Dabholkar (1996) found that consumers with a higher preference for interaction (and thus a preference for interpersonal interactions) will generally rate the service quality of self-service technology encounters lower. Dabholkar and Bagozzi (2002) investigated the impact of preference for interaction as a moderating variable between ease of use, performance and fun and the consumer's attitude toward using self-service technology, and also between attitude toward using self-service technology and intention to use self-service technology. The results revealed that a higher preference for an interaction with a service provider strengthened the relationship between ease of use and attitude toward using self-service technology, and between fun and attitude toward using self-service technology. The relationship between performance and attitude toward self-service technology was not strengthened by a preference for an interaction with the service provider, possibly as the reliability of the self-service technology is no more important to consumers with a high need or a low preference for an interaction with the service provider (Dabholkar and Bagozzi, 2002). Nevertheless, the relationship between attitude toward using self-service technology and intention to use self-service was strengthened by an interaction preference. Meuter (1999) found that an interaction preference significantly affected the likelihood of self-service technology trial. The greater the interaction preference the less likely the consumer would trial the self-service technology option. It was also found that having a preference for an

interaction has a negative impact on motivation to try a self-service technology (Meuter, 1999).

Preference for personal service. It can be said, therefore, that a preference for personal service will moderate the positive relationship between satisfaction with self-service technology and satisfaction with personal service, and overall satisfaction. In other words, those consumers who are satisfied with the personal service they received will have higher overall satisfaction if they had a preference for personal service, as the consumer received the service via their preferred service delivery method. In the other instance, however although a consumer may have a successful interaction with self-service technology (in other words, be satisfied with the self-service technology), this satisfaction will contribute less toward their overall satisfaction if they actually had a preference for personal service, not for self-service technology. That is, the consumer actually wanted the service to be delivered by a human service provider, not by a machine. It is also likely that those consumers, who have a greater preference for personal service, when they are satisfied with the service they received, are more inclined to seek out a relationship with the organization because of the social benefits involved. This gives rise to the following three moderating hypotheses.

Hypothesis 6: With a greater preference for personal service,

(a) The positive relationship between personal service satisfaction and overall satisfaction will be strengthened,

(b) The positive relationship between self-service technology satisfaction and overall satisfaction will be attenuated, and

(c) The positive relationship between overall satisfaction and affective commitment will be strengthened.

Preference for self-service technology. In a similar manner, if the consumer has a preference for self-service technology as a delivery mode, this will also alter the relationship between satisfaction with self-service technology and personal service satisfaction, and overall satisfaction. Meuter et al. (2000) revealed that some consumers selected self-service technology as a way to avoid interactions with service providers. The avoiding of service personnel is likely associated with Dabholkar's preference for interaction (Dabholkar and Bagozzi, 2002). It is possible therefore, that the moderating impact as suggested above with preference for personal service is reversed when the consumer has a greater preference for self-service technology. This may not always be the case as potentially it may be context or mood specific.

A related construct that has been explored is attitude toward using self-service (Bobbitt and Dabholkar, 2001). This construct captures whether consumers have a generalized attitude toward using self-service, regardless of whether technology is involved in the self-service process or not (Bobbitt and Dabholkar, 2001). It is suggested therefore, in the current study, that a satisfying interaction with personal service will contribute less to overall satisfaction, if the consumer has a greater preference for self-service technology as it is not the delivery method the consumer really wants to interact with. Conversely, the positive relationship between satisfaction with self-service technology and overall satisfaction will be stronger if the consumer has a greater preference for self-service technology. In other words, as the consumer wants to interact with self-service technology facilities rather than with a

human service provider, a more satisfying interaction with these facilities will result in greater satisfaction overall. This suggests the following two hypotheses.

Hypothesis 7: With a greater preference for self-service technology,

(a) The positive relationship between personal service satisfaction and overall satisfaction will be attenuated,

(b) The positive relationship between self-service technology satisfaction and overall satisfaction will be strengthened.

Methodology

Research setting

The research was conducted in hotels in a metropolitan area of Australia. Respondents for the study included business travelers as this group of travelers had been identified through preliminary research as frequent users of self-service technology and was therefore deemed an appropriate sample. This was deemed a suitable context for the study as hotels are traditionally classified as high contact services with a high degree of personalization (Bowen, 1990; Connolly, 2000) where personal service is important for determining consumer satisfaction and consumer commitment (Dube and Renaghan, 1999). However there is a trend in hotels toward introducing self-service technology to reduce service encounters with front-line employees (Brown and Dev, 2000) and some have found it difficult to introduce a variety of self-service technology while still maintaining service quality because of the lack of human interaction (Armstrong, Mok, Go and Chan, 1997). Examples of self-service technology used during the hotel stay include: automated check-in and

check-out facilities; automated room service ordering systems; automated message services; and automated house keeping services.

The focus in this research is self-service technology used during a hotel stay versus personal interactions in traditional service encounters with hotel employees. There are other forms of self-service technology available prior to a hotel stay such as Internet hotel booking services or using the Internet to obtain information about a hotel (Siguaw and Enz, 1999) which were not investigated during this current study.

Sample characteristics

Four hotels participated in the fieldwork by distributing survey packs to guests over a two-month period. The survey packs included a cover letter from the researcher explaining the study, a self-completed questionnaire and a reply-paid envelope. Approximately 1200 survey packets were distributed over a one month period. A small number of returned surveys were discarded, leaving 350 usable surveys; a response rate of almost 25%. This was due to either large amounts of missing data, the survey not being completed by a business guest, or a bias in the survey completion providing a lack of variation in the responses such as group circling all '1's. Of the 350 usable returns, approximately 57% of the sample is male, 43% is female. The average age of respondents is 43 years. The majority of these respondents had completed at least senior high school. The average annual income of the respondents is AUD $84,000. The respondents have an average of 17 trips away from home a year for business purposes and the average length of these is three nights. The respondents had returned to their most frequently-visited business hotel an average of

seven times in the last year. Eighty-one percent of the respondents' business trips were domestic trips.

Non-response bias

As the surveys were not distributed at one point in time non-response bias could not be estimated in the typical manner of comparing early and late respondents (Armstrong and Overton, 1977). Demographic information about hotel guests staying in the three participating hotels was also unavailable to make a comparison. Therefore, a demographic comparison based on age was made with industry data provided by the Queensland Visitor Survey (conducted for the Queensland Tourist and Travel Corporation by ACNielsen in 1997). The sample data contains more responses in the upper age categories, which might be expected from a sample of business travelers versus those on holiday (with families). Table 1. illustrates the age percentages for the industry data.

INSERT TABLE 1. ABOUT HERE

Measures

The majority of measures in the survey were adapted from existing scales drawn from marketing and management literature. In developing the survey: a) two focus groups and twelve in-depth interviews were conducted to explore the research area and clarify terminology; b) a panel of 15 experts from academia and industry assessed the substantive validity of the questions following Anderson and Gerbing (1991) and also commented on the wording and instrument format; c) a pilot study of 30 hotel guests

was conducted. Based on these preliminary steps, a few modifications were made to the survey. The final items are included in the appendix.

Affective commitment

Affective commitment is defined as a consumer's desire to continue a relationship with an organization because of a positive affect (emotion) toward the organization (Kim and Frazier, 1997). This was measured on a multi-item Likert scale anchored from strongly agree (= 5) to strongly disagree (= 1). The indicators were drawn from previous studies in marketing and psychology and modified to suit the research context (Allen and Meyer, 1990; Morgan and Hunt, 1994). The items include the following: "I feel a sense of belonging to this hotel", "I am loyal to this hotel", "I would like to develop a long-term relationship with this hotel" and "I am committed to my relationship with this hotel". The scale was highly reliable (construct reliability = .88, variance extracted = .65).

Overall satisfaction

Overall satisfaction is an evaluation based on the consumer's overall experiences with a service organization over time (Garbarino and Johnson, 1999). The questions related to the respondent's last stay in their most frequently-visited hotel over the last twelve months. They were asked; "Describe your feelings about your overall experience with your last stay in your most frequently visited hotel". Respondents were asked among others, to indicate the extent to which they felt "Satisfied/dissatisfied", "Contented/disgusted", "Pleased/displeased" and "Delighted/disappointed". All of the items were measured on a five-point semantic

differential scale based on the items used by Ganesan (1994). The scale achieved high reliability (construct reliability = .92, variance extracted = .70).

Transaction-Specific Satisfaction

Transaction-specific satisfaction is defined as an immediate post-purchase evaluation or judgment of the most recent transactional experience with the firm (Garbarino and Johnson, 1999). Two transaction-specific forms of satisfaction are captured in this study: satisfaction with self-service technology and satisfaction with personal service. These situation specific forms of satisfaction are derived from interactions the customer has with self-service technology and their personal service interactions with front-line employees, respectively. The same six anchors used for overall satisfaction were used to measure transaction-specific satisfaction. However the prompts for the questions are tailored to the two different elements of transaction-specific satisfaction. The items were measured using five-point semantic differential scales.

For satisfaction with self-service technology respondents were asked; "Describe your feelings about your experiences with self-service technologies during your *last stay* in your most frequently visited hotel (for example, using the TV to check-out or using the automatic room key dispenser)". The end points provided were; "Dissatisfied/satisfied", "Sad/happy" and "Pleased/displeased". The scale achieved high reliability (construct reliability = .95, variance extracted = .83).

For satisfaction with personal service respondents were asked; "Describe your feelings about your interaction with hotel staff during your *last stay* at your most frequently visited hotel (for example with the reception staff or concierge)". The

same end points were used; “Dissatisfied/satisfied”, “Sad/happy” and “Pleased/displeased”. The scale achieved high reliability (construct reliability = .96, variance extracted = .84).

Social Competency

The moderating construct of social competency is conceptualized as a consumer's willingness and ability to engage others in social dialogue. This construct is based on Riggio's (1986) scale of social skills. The items selected for this present study represent a sample of the items from the social expressivity dimension of the social skills scale particularly focusing social dialogue and willingness to communicate in a social setting. The items adapted from Riggio (1986) are all presented as positive items and are measured on five point Likert scales with the anchors of strongly agree (= 5) and strongly disagree (= 1). The items included in this social competency construct are: “I love to socialize”; “I always mingle at social events”; “I usually take the initiative and introduce myself to strangers”; “I am usually the one to begin conversations”; and, “At social events, I enjoy speaking to a large number of people”. The scale achieved high reliability (construct reliability = .97, variance extracted = .87).

Technology Competency

The next moderating construct, technology competency, refers to a consumer's belief in their competency with technology in general. This construct captures capabilities across a range of technologies such as computers, video recorders, and digital video disk players. These measures were adapted from Cohen and Waugh (1989) and Heinssen et al. (1987). Both of these studies investigated competency with computers

however the items were modified for this study to relate to technology in general. The items included: “I feel comfortable about using technology”; “I am not intimidated by technology”; “I am confident about my ability to use technology”; and, “I feel at ease with technology”. The items were measured on five point Likert scales with the end points, strongly agree (= 5) and strongly disagree (= 1). The construct reliability was .93 and variance extracted .77.

Preference for personal service

Preference for personal service refers to the consumer’s want to have the service delivered via a human service provider, and is defined as the need that some consumers have for interacting with service employees during the service encounter (Dabholkar, 1996). It is expected in the current study that this interaction can take the form of conversations, receiving personal attention from service employees, or just a general preference for face-to-face service. The items selected for inclusion in this scale included four items based on Dabholkar's (1996) need for interaction with service employee scale and three items which were designed specifically for this study. The reversed items in Dabholkar (1996) were reworded to form positively worded statements in the current study. The items in the current study were measured on five point Likert scales with the end points, strongly agree (= 5) and strongly disagree (= 1). The items include; “Face-to-face contact in providing services makes the process enjoyable”; “I like interacting with the person who provides the service”; “Service staff should make an effort to interact with customers”; and, “I have a preference for dealing with contact staff in service settings”. The construct reliability was .85 and variance extracted .66.

Preference for self-service technology

This construct refers to a consumer's preference for interaction with self-service technology during the service encounter. This construct and its items were developed specifically for this research and refer to a general preference for self-service technology rather than that pertaining to a specific service encounter. The items in the current study were measured on five point Likert scales (5 = strongly agree and 1 = strongly disagree). The items were developed from previous in-depth interviews and also from the construct preference for personal service. Example items include; "Using technology to deliver the service myself is enjoyable"; "I prefer to use technology to complete the service myself"; "I prefer self-service technologies to face-to-face transactions"; "I am happy to complete transactions myself using technology"; and, "I actively seek out services where I can serve myself using technology". The construct reliability was .86 and variance extracted .61.

No reverse-worded items were used in the current study in order to enhance scale unidimensionality, a main aim of this research (Anderson, Gerbing and Hunter, 1987). It is acknowledged, however that the absence of negatively-worded items in this survey may have resulted in a degree of respondent acquiescence bias.

Analysis and results

One-factor models for each of the constructs were estimated first. The summary results of these models are illustrated in Table 2. Listwise deletion was used for the missing values. The two-step approach described by Anderson and Gerbing (1988) was then followed for model estimation. Following this approach, a measurement model was estimated prior to examining the hypothesized relationships with a

structural model. The constructs were modeled as correlated first-order constructs and the indicators were related only to their intended constructs. The model was estimated in LISREL 8.54 with sample covariances as input (Joreskog and Sorbom, 1996). The effective sample size with listwise deletion was 260 observations. The chi-square statistic for the measurement model was significant, which is to be expected given the statistic's sensitivity to sample size ($\chi^2(499) = 952.11$, $p<0.001$) (Hair et al., 1998). The other fit measures indicate that there is adequate fit to the sample data (goodness-of-fit index [GFI] = 0.82, adjusted goodness-of-fit [AGFI] = 0.79, comparative fit index [CFI] = 0.94, Root mean square residual [RMR] = 0.05). All of the retained standardized estimates are significant ($p<0.05$) and equal or greater to 0.65. These results provide evidence of convergent validity, and item and scale reliability. The construct intercorrelations are reported in Table 3. Discriminant validity was assessed for each pair of constructs by following Fornell and Larcker (1981) and Kelloway (1995). Discriminant validity was achieved across all possible pairs of constructs in this study using both criteria.

INSERT TABLE 2. ABOUT HERE

INSERT TABLE 3. ABOUT HERE

Following the assessment of the measurement model, the hypothesized model shown in Figure 1. was estimated. Using listwise deletion the effective sample size for this model is 260 observations. The model produced a significant chi-squared value (χ^2 (131) = 443.56, p = 0.001) which might be expected given the test's sensitivity to sample size. The values of the GFI (0.84), AGFI (0.79), CFI (0.94), and RMR (0.04)

indicate adequate support for the model. The standardized parameter estimates and *t* values are illustrated in Table 4. The error terms were not allowed to covary in this hypothesized model. Examination of the theta delta matrices suggested that no significant correlations existed between the error terms. As predicted in H_1, the effect of satisfaction with self-service technology to overall satisfaction is positive and significant ($p = 0.01$). The path from satisfaction with personal service to overall satisfaction is also positive and significant, ($p = 0.001$) as hypothesized by H_2. Note that, the path from satisfaction with self-service technology to overall satisfaction is not as strong as the path from satisfaction with personal service to overall satisfaction. The final path, from overall satisfaction to affective commitment (H_3), was also positive and significant ($p = 0.001$). The proposed model accounts for a substantial proportion of the variance in overall satisfaction (61%) and affective commitment (26%). Overall, the proposed model is supported by the sample data.

INSERT TABLE 4. ABOUT HERE

An alternative full model was also estimated which included paths from satisfaction with personal service, and satisfaction with self-service technology, direct to affective commitment. Previous research (Jones and Suh, 2000) suggests that there is also a direct relationship between transaction specific satisfaction and repurchase intentions, so it reflects that there may also be a relationship between transaction specific satisfaction and affective commitment.

Estimating the alternate full model produced satisfactory goodness-of-fit statistics. These statistics are illustrated in Table 4. The model produced a significant chi-

squared value (χ^2 (129) = 438.46, p = 0.001). The values of GFI (0.84), AGFI (0.79), CFI (0.94), and RMR (0.04) indicate general support for the model. As before, there is a positive and significant relationship between satisfaction with self-service technology and overall satisfaction (p = 0.001), supporting H_1. As predicted (H_2) the path from satisfaction with personal service to overall satisfaction is positive and significant (p = 0.001). The path from overall satisfaction to affective commitment (H_3) is also positive and significant (p = 0.001). The new path from satisfaction with self-service technology to affective commitment is not significant (p = 0.37), as is the other additional path, from satisfaction with personal service direct to affective commitment (p = 0.07). The competing model accounts for slightly more of the variance in overall satisfaction (61%) and affective commitment (27%). It must be noted however, that as the two additional paths are not significant and taking into account parsimony, the hypothesized model represents a better fit to the data.

Multigroup analysis

To examine the final four predicted hypotheses a multigroup analysis was undertaken. This multigroup analysis was to ascertain if there was a difference in the sample when split on the consumer characteristics of social competency, technology competency, preference for self-service technology and preference for personal service. The hypothesized moderating effects were estimated through established modelling procedures using multigroup analysis in LISREL (Babin and Boles 1998). This involves firstly separating the data to be analyzed into a high and low data sets based on the four moderating variables. For example one data set would be drawn from respondents rating high levels of social competency, and another data set would represent respondents rating low levels of social competency. Median values are

extracted initially to aid comparison. Following this, two multigroup models were tested; one analyzed the model presented in Figure 1 with all paths constrained and the other with all paths free. By running the analysis in this fashion manner and utilizing the two levels of the data set as described, the χ^2 difference test (Sharma, 1996) is indicative of any moderating effects. Individual path coefficients and t-values are subsequently compared to identify path-level differences. The fit indices of the models cited are not of particular interest at this stage of the analysis, but rather it is the statistical differences that are indicative of moderating effects.

The results revealed that social competency was the only significant moderator of the four consumer characteristic moderators. Table 5 illustrates the changes in the standardized path coefficients (from the low group to the high group) in the presence of the four moderating variables for the paths estimated in the model. An additional test was conducted to determine significant differences in the individual paths in the model in the presence of social competency (the only significant moderating variable). A chi-squared difference test was conducted whereby each path was freed individually. This chi-square difference test indicated that the paths showed a significant change between the low and the high group when moderating for social competency. The results of this can be found in Table 6.

INSERT TABLE 6. ABOUT HERE

The following section refers to the results of the chi-squared difference test and its relationship to the hypothesized paths in H_4. The other moderating consumer characteristics explored in this study (technology competency, preference for self-

service technology and preference for personal service) were not investigated in this manner as they were not found to significantly alter the relationships in the model.

Through the chi-squared difference test for social competency it is evident that two of the three hypotheses on social competency were supported. Hypothesis 4a was supported. That is, for those consumers high in social competency, the positive relationship between satisfaction with personal service and overall satisfaction is attenuated. Hypothesis 4b however was not supported. Thus, for those consumers high in social competency, the relationship between satisfaction with self-service technology and overall satisfaction is attenuated, not strengthened as predicted. In fact, the path is non-significant for those consumers high in social competency, and only significant for those consumers low in social competency. That is, for those consumers who are high in social competency there is no relationship between self-service technology and overall satisfaction. The final hypothesis focusing on social competency (H_{4c}) is supported. That is, for those consumers high in social competency, the positive relationship between overall satisfaction and affective commitment is stronger as predicted. Interestingly, the path is only significant in those consumers high in social competency. For those consumers low in social competency, there is no relationship between overall satisfaction and affective commitment.

Discussion and Conclusion

The preceding analyses revealed some interesting patterns. H_1 predicted a positive relationship between satisfaction with self-service technology and overall satisfaction. Conceptually, customers who are satisfied with their self-service technology

experiences are more likely to have positive overall evaluations for their hotel stay. Consistent with this, the results show that satisfaction with self-service technology has a positive association on overall satisfaction. H_2 predicted a positive relationship between satisfaction with personal service and overall satisfaction. Customers who are satisfied with the personal service interactions they have with hotel staff are more likely to be satisfied overall with their hotel stay. This hypothesis was supported. The results show that satisfaction with personal service relates to overall satisfaction with the hotel stay. Both of these results are in keeping with research by Jones and Suh (2000) which identified a path from transaction-specific satisfaction to overall satisfaction. However this current paper builds on Jones and Suh (2000) by investigating transaction specific satisfaction focusing on self-service technology interactions.

Furthermore, satisfaction with personal service has a much stronger relationship with overall satisfaction than satisfaction with self-service technology. This result is consistent with previous studies which have focused on the importance of personal service interactions in satisfying customers in service settings (Beatson et al., 2006; Singh, 1991; Solomon et. al., 1985). The findings reported here reinforce the importance of employee behavior on customers' perceptions of the service experience. Although the manner in which services are delivered may be changing, the results indicate that customers still place much importance on face-to-face contact with front-line employees. For hotel guests at least, it appears that personal service interactions form the basis of overall satisfaction ratings.

A positive relationship was predicted between overall satisfaction and affective commitment. That is, those customers who are satisfied overall with their service experience are more maintain a relationship with the service provider. Consistent with this prediction, the results indicate that overall satisfaction has a positive association with affective commitment. This result is also consistent with past literature such as Jones and Suh (2000), Mittal et al. (1998), and Spreng et al. (1996) which link overall satisfaction with loyalty toward an organization.

Neither of the additional paths tested in the full model were supported. That is, there was no relationship found between the customers who were satisfied with the self-service technology or the personal service and their loyalty toward the organization. As overall satisfaction does not explain all of the variance in affective commitment it is likely that there are other contributing factors at work. These other factors may include the quality of the hotel decor, the quality of the facilities, and the standard of the catering. These may in turn have a direct relationship to affective commitment or may be mediated through overall satisfaction.

In addition to the direct paths investigated in this study a series of moderating relationships were also investigated. These were social competency, technology competency, preference for personal service and preference for self-service technology. These moderating effects indicated that only social competency showed a significant difference between the low and the high group. Following the general test of moderation, a subsequent estimation was conducted examining the strength of the individual paths with regard to social competency (as this was the only moderating construct that was found to alter the relationships in the model). This test suggested

that the first hypothesis associated with social competency (H_{4a}) was supported. That is, for those consumers who are high in social competency, the relationship between personal service satisfaction and overall satisfaction is attenuated. This suggests that those consumers who are more gregarious and who are more comfortable in social situations may place more importance on their interactions with others. This may result in them expecting good interactions with service employees. Therefore as a positive experience is expected, when it occurs it may have little contribution to their overall evaluation of the service experience.

Hypothesis 4_b was not supported (for consumers are high in social competency the relationship between satisfaction with self-service technology will be strengthened). In fact, the relationship was opposite to what was predicted, and the path was found to be non-significant in those consumers high in social competency. This finding, therefore, produces some confusing results. It appears that both satisfaction with personal service and satisfaction with self-service technology are stronger contributors to overall satisfaction for consumers low in social competency. This finding warrants further investigation as the reasoning behind it seems unclear.

Hypothesis 4_c predicted that for those consumers high in social competency, overall satisfaction will have a stronger contribution to affective commitment. This hypothesis was supported. The likely explanation for this finding is that the strongest benefit a consumer gets from a relationship with a service organization is a social benefit (Gwinner et al., 1998). Therefore, when a consumer is satisfied overall with the service experience, if they are socially competent, it is likely that they will seek out a relationship with the organization to further the social bonds between them and

the service provider. One interesting finding with regard to the moderating impacts was that preference for personal service was not identified as a moderator. Preference for interaction has been identified in previous self-service technology research as a moderator between the determinants of attitude and attitude toward using self-service technology (Dabholkar and Bagozzi, 2002). Perhaps, as the current research is more affective in nature, preference for personal service was therefore not identified. This is again another area which may want further attention.

The impact of the moderators indicates that factors such as consumer characteristics can impact on the relationships, although the area still warrants further expansion. Previous research has also indicated the existence of other moderators. Dabholkar and Bagozzi (2002) highlighted a number of successful moderators; self-efficacy, inherent novelty seeking, preference for interaction, self-consciousness, perceived waiting time and social anxiety. The investigation of moderating effects of external factors can be more meaningful in some instances than direct effects (Dabholkar and Bagozzi, 2002) suggesting that moderators have a role in self-service technology research. The impact of social competency highlights an interesting future area of self-service technology research. An investigation into the consumer's ability and willingness for social interactions has never been investigated before with regard to self-service technology. The focus has tended to be on attitude, experience with, and level of comfort with technology. The results, however do suggest that this area of social competency should be investigated further as it appears to impact on self-service technology acceptance and evaluation. For service managers this highlights the need to look into the psychographic and behavioral make-up of their customers to establish whether the introduction of self-service technology facilities is likely to

enhance the service offering for their target market. The investigation of moderators in this and other studies suggests that organizations may be able to segment their consumer base to ensure they are delivering service in the form desired by their consumers. Walker et al. (2002) also suggests that the market place may be able to be segmented based on their willingness and ability to use self-service technology. This will help managers perhaps decide whether investment in the technology would be better spent improving staff performance, which would have a motivating impact on staff and therefore the service given to the guests. For hotel managers, an investment in the hotel and a focus on improving personal service will be a positive factor for all guests. Extensions to other settings are clearly warranted.

Limitations and future research areas

While this study has been successful at furthering our understanding of self-service technology research there are a number of potential limitations which must be acknowledged and overcome to improve future research in the area. The first limitation to be addressed focuses on the fit statistics for the study. While these show adequate support for the models, the results and the conclusions drawn from these results must be taken with some hesitation as the fit is not excellent. The study presented here is a good initial starting point for further research into the area, however more research is needed to investigate these results further and to draw conclusions with any strong certainty. Repeating the study in another context would also overcome one of the other limitations being the single hotel context. Suitable multiple contexts could include banking, airlines and on-line purchasing.

Extending on this research could include further investigation of moderators as discussed above in the results section, but it could also include context extensions such as self-service technology applications in business-to-business contexts through the application and acceptance of use of Intranet and Extranet facilities and also applications within cross-cultural contexts. As marketplaces are becoming increasingly global, cultural influences are likely to impact on acceptance and usage of technology as a service delivery tool. Another area to investigate is acceptance and usage of self-service technology over time through the use of longitudinal studies. By extending this research to multiple contexts, different national contexts and with a time dimension this ensures validity of the measures and the generalizability of the study.

In summary, the findings from this study reflect the importance of personal service interactions with front-line employees in determining overall satisfaction. Although satisfaction with self-service technology has an impact on consumers' overall satisfaction, the interactions that take place with staff appear to have a greater impact on consumers' overall satisfaction evaluations. Moreover, these overall satisfaction evaluations play a role in consumers' affective commitment to the service provider. All of these relationships are moderated by social competency. Organizations still have a way to go to understand the complexity of the self-service environment and its impact on the service encounter and this study goes one step toward this comprehension. Consumers have been interacting with service staff for a great deal longer and with more frequency than they have been with self-service technology so it is understandable that at present the contribution of self-service technology toward satisfaction and commitment is not as strong. It is likely that with time consumer

acceptance and usage of self-service technology will continue to grow impacting its effect in the marketplace. Organizations need to continually investigate the role and acceptance of self-service technology thus ensuring the development of successful service strategies in this changing environment.

References

Allen, N. J. and J. P. Meyer (1990), "The Measurement and Antecedent of Affective, Continuance and Normative Commitment to the Organization", Journal of Occupational Psychology, 63 (1), 1-18.

Anderson, E. W., C. Fornell and D. R. Lehmann (1994), "Customer Satisfaction, Market Share, and Profitability: Findings from Sweden", Journal of Marketing, 58 (July), 53-66.

Anderson, J. C. and D. W. Gerbing (1988), "Structural Equation Modeling in Practice: A Review and Recommended Two-Step Approach", Psychological Bulletin, 103 (3), 411-423.

Anderson, J. C. and D. W. Gerbing (1991), "Predicting the Performance of Measures in a Confirmatory Factor analysis With a Pretest Assessment of Their Substantive Validities", Journal of Applied Psychology, 76 (5), 732-740.

Anderson, J. C., D. W. Gerbing and J. E. Hunter (1987), "On the Assessment of Unidimensional Measurement: Internal and External Consistency, and Overall Consistency Criteria", Journal of Marketing Research, 24 (November), 432-437.

Armstrong, J. S. and T. S. Overton (1977), "Estimating Nonresponse Bias in Mail Surveys," Journal of Marketing Research, 14 (August), 396–402.

Armstrong, R. W., C. Mok, F. Go and A. Chan (1997), "The Importance of Cross-Cultural Expectations in Measurement of Service Quality Perceptions in the Hotel Industry", International Journal of Hospitality Management, 16 (2), 181-190.

Beatson, A. T., Coote, L. V., and J. M. Rudd (2006), "Determining Customer Satisfaction and Commitment through Self-Service Technology and Personal Service Usage" Journal of Marketing Management, 22 (7/8), 853-882.

Beatty, S. E., L. R. Kahle and P. Homer (1988), "The Involvement-Commitment Model: Theory and Implications", Journal of Business Research, 16 (March), 149-167.

Bernhardt, K. L., N. Donthu, and P. A. Kennett (2000), "A Longitudinal Analysis of Satisfaction and Profitability", Journal of Business Research, 47 (2), 161-171.

Bitner M. J. and A. R. Hubbert (1994), "Encounter Satisfaction versus Overall Satisfaction versus Quality", in R. Rust and R. Oliver, eds. Service Quality: New Directions in Theory and Practice, Sage, Thousand Oaks, CA, 72-94.

Bitner, M. J., S. Brown and M. L. Meuter (2000), "Technology Infusion in Service Encounters", Journal of the Academy of Marketing Science, 28 (1), 138-149.

Bloemer, J. and Odekerken-Schröder, G. (2003), "Antecedents and Consequences of Affective Commitment," Australasian Marketing Journal, 11 (3), 33-43

Bloemer, J. M. M. and H. D. P. Kasper (1995), "The Complex Relationship between Consumer Satisfaction and Brand Loyalty", Journal of Economic Psychology, 16 (2), 311-329.

Bobbitt, L. M. and P. A. Dabholkar (2001), "Integrating Attitudinal Theories to Understand and Predict Use of Technology-Based Self-Service", International Journal of Service Industry Management, 12 (5), 423-450.

Bowen, J. T. (1990), "Development of a Taxonomy of Services to Gain Strategic Marketing Insights", Journal of the Academy of Marketing Science, 18 (1), 43-49.

Brown, J. R. and C. S. Dev (2000), "Improving Productivity in a Service Business. Evidence from the Hotel Industry", Journal of Service Research, 2 (May), 339-354.

Churchill, G. A. Jr. and C. F. Suprenant (1982), "An Investigation into the Determinants of Customer Satisfaction", Journal of Marketing Research, 19 (November), 491-504.

Cohen, B. A. and G. W. Waugh (1989), "Assessing Computer Anxiety", Psychological Reports, 65 (3, Pt 1), 735-738.

Connolly, D. J. (2000), "Shifting Paradigms: Using Information Technology to Enhance Service Dyads in Luxury Hotels", Journal of Hospitality and Leisure Marketing, 7 (2), 3-38.

Cronin, J. J. and S. A. Taylor (1992), "Measuring Service Quality; A Reexamination and Extension", Journal of Marketing, 56 (3), 55-68

Czepiel, J. A. (1990), "Service Encounters and Service Relationships: Implications for Research", Journal of Business Research, 20 (1), 13-21.

Dabholkar, P. A. (1996), "Consumer Evaluations of New Technology-Based Self-Service Options: An Investigation of Alternative Models of Service Quality", International Journal of Research in Marketing, 13 (1), 29-51.

Dabholkar, P. A. (2000), "Technology in Service Delivery: Implications for Self-Service and Service Support", in Handbook of Services Marketing and Management. T. A. Swartz and D. Iacobucci eds., Thousand Oaks, CA, Sage, 103-110.

Dabholkar, P. A. and D. I. Thorpe (1994), "Does Customer Satisfaction Predict Shopping Intentions", Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior, 7, 161-171.

Dabholkar, P. A. and R. P. Bagozzi (2002), "An Attitudinal Model of Technology-Based Self-Service: Moderating Effects of Consumer Traits and Situational Factors", Journal of the Academy of Marketing Science, 30 (3), 184-201.

Dick, A. S. and K. Basu (1994), "Customer Loyalty: Toward an Integrated Conceptual Framework", Journal of the Academy of Marketing Science, 22 (2), 99-113.

Dube, L and L. M. Renaghan (1999), “Building Customer Loyalty”, Cornell Hotel and Restaurant Administration Quarterly, 40 (5), 78-88.

Flett, G. L., P. L. Hewitt and T. De Rossa (1996), "Dimensions of Perfectionalism, Psychosocial Adjustment, and Social Skills", Personal Individual Differences, 20 (2), 143-150.

Fornell, C. and D. F. Larcker (1981), “Evaluating Structural Equation Models with Unobservable Variables and Measurement Error”, Journal of Marketing Research, 18 (1), 39-50.

Ganesan, S. (1994), “Determinants of Long-Term Orientation in Buyer-Seller Relationships”, Journal of Marketing, 58 (April), 1-19.

Garbarino, E. and M. S. Johnson (1999), “The Different Roles of Satisfaction, Trust, and Commitment in Customer Relationships”, Journal of Marketing, 63 (April), 70-87.

Giese, J. L and J. A. Cote (2000), “Defining Customer Satisfaction”, Academy of Marketing Science Review [on-line], 00 (01). Available: http://www.amsreview.org/amsrev/theory/giese00-01.html

Gruen, T. W., J. O. Summers and F. Acito (2000), “Relationship Marketing Activities, Commitment, and Membership Behaviors in Professional Associations”, Journal of Marketing, 64 (July), 34-49.

Gwinner, K. P., D. D. Gremler and M. J. Bitner (1998), “Relational Benefits in Services Industries: The Customer’s Perspective,” Journal of the Academy of Marketing Science, 26 (2), 101-114.

Hartline, M. D., J. G. Maxham III, and D. O. McKee (2000), “Corridors of Influence in the Dissemination of Customer-Oriented Strategy to Customer Contact Service Employees”, Journal of Marketing, 64 (April), 35-50.

Heinssen, R. K. Jr., C. R. Glass, and L. A. Knight (1987), "Assessing Computer Anxiety: Development and Validity of the Computer Anxiety Rating Scale", Computers in Human Behavior, 3 (1), 49-59.

Hennig-Thurau, T. and A. Klee (1997), “The Impact of Customer satisfaction and Relationship Quality on Customer Retention: A Critical Reassessment and Model Development”, Psychology and Marketing, 14 (8), 737-164.

Johlke, M. C., D. F. Duhan, R. D. Howell and R. W. Wilkes (2000), “An Integrated Model of Sales Managers’ Communication Practices”, Journal of the Academy of Marketing Science, 28 (2), 263-277.

Jones, M. A. and J. Suh (2000), “Transaction-Specific Satisfaction and Overall Satisfaction: An Empirical Analysis”, Journal of Services Marketing, 14 (2), 147-159.

Kelloway, K. E. (1995), “Structural Equation Modeling in Perspective”, Journal of Organizational Behavior, 16 (3), 215-224.

Kim, K. and G. L. Frazier (1997), "On Distributor Commitment in Industrial Channels of Distribution: A Multicomponent Approach", Psychology and Marketing, 14 (8), 847-877.

MacKenzie, S. B., P. M. Podsakoff and M. Ahearne (1998), "Some Possible Antecedents and Consequences of In-Role and Extra-Role Salesperson Performance", Journal of Marketing, 62 (July), 87-98.

McQuitty, S., A. Finn and J. B. Wiley (2000), "Systematically Varying Consumer Satisfaction and its Implications for Product Choice", Academy of Marketing Science Review [on-line], 00 (10). Available: http://www.amsreview.org/amsrev/theory/mcquitty10-00.html

Meuter, M. L. (1999), Consumer Adoption of Innovative Self-Service Technologies: A Multi-Method Investigation. Unpublished PhD thesis, Arizona State University, August.

Meuter, M. L. and M. J. Bitner (1997), "The New Service Encounter: Customer Usage and Satisfaction with Self-service Technologies", presented at the Frontiers in Services Conference, American Marketing Association, Nashville, TN.

Meuter, M. L., A. L. Ostrom, M. J. Bitner and R. I. Roundtree (2003), "The Influence of Technology Anxiety on Consumer Use and Experiences with Self-Service Technologies", Journal of Business Research, 56 (1), 899-906.

Meuter, M. L., A. L. Ostrom, R. I. Roundtree and M. J. Bitner (2000), "Self-Service Technologies: Understanding Customer Satisfaction with Technology Based Service Encounters", Journal of Marketing, 64 (3), 50-64.

Mittal, B. and W. M. Lassar (1998), "Why do Customers Switch? The Dynamics of Satisfaction versus Loyalty", Journal of Services Marketing, 12 (3), 177-194.

Mittal, V., W. T. Ross Jr., and P. M. Baldasare (1998), "The Asymmetric Impact of Negative and Positive Attribute-Level Performance on Overall Satisfaction and Repurchase Intentions", Journal of Marketing, 62 (January), 33-47.

Morgan, R. M. and S. D. Hunt (1994) "The Commitment-Trust Theory of Relationship Marketing", Journal of Marketing, 58 (3), 20-38.

Oliver, R. L. (1999), "Whence Customer Loyalty", Journal of Marketing, 63 (4), 33-44.

Parasuraman A., V. A. Zeithaml and L. L. Berry (1994), "Reassessment of Expectations as a Comparison Standard in Measuring Service Quality: Implications for Further Research", Journal of Marketing, 58 (January), 111-124.

Parasuraman, A. and D. Grewal (2000), "The Impact of Technology on the Quality-Value-Loyalty Chain: A Research Agenda", Journal of the Academy of Marketing Science, 28 (1), 168-174.

Payne, A. and J. Rickard (1993), “Relationship Marketing: Customer Retention, and Service Firms profitability”, British Academy of Management Annual Conference, Milton Keynes, UK.

Queensland Visitor Survey (QVS), Executive Summary Tables, Brisbane 1996/1997, Prepared for the Queensland Tourist and Travel Corporation by ACNielsen.

Riggio, R. E. (1986), "Assessment of Basic Social Skills", Journal of Personality and Social Psychology, 51 (3), 649-660.

Riggio, R. E., B. Throckmorton and S. DePaola (1990), “Social Skills and Self-Esteem”, Personal Individual Differences, 11 (8), 799-804.

Siguaw, J. A and C. A. Enz (1999), “Best Practices in Information Technology”, Cornell Hotel and Restaurant Administration Quarterly, 40 (5), 58-71.

Singh, J. (1991), “Understanding the Structure of Consumers' Satisfaction Evaluations of Service Delivery”, Journal of the Academy of Marketing Science, 19 (3), 223-244

Spreng, R. A., S. B. MacKenzie and R. W. Olshavsky (1996), “A Reexamination of the Determinants of Consumer Satisfaction”, Journal of Marketing, 60 (July), 15-32.

Szymanski, D. M. and D. H. Henard (2001), “Customer Satisfaction: A Meta-Analysis of the Empirical Evidence”, Journal of the Academy of Marketing Science, 29 (1), 16-35.

van Birgelen, M., k. de Ruyter, A. de Jong and M. Wetzels (2002), “Customer Evaluations of After-Sales Service Contact Modes: An Empirical Analysis of National Culture's Consequences”, International Journal of Research in Marketing, 19 (1), 43-64.

Walker, R. H., M. Craig-Lees, R. Hecker and H. Francis (2002), “Technology-Enabled Service Delivery. An Investigation of Reasons Affecting Customer Adoption and Rejection”, International Journal of Service Industry Management, 13 (1), 91-106.

Zeithaml, V.A (1981), “How Consumer Evaluation Processes Differ Between Goods and Services”, in Marketing of Services, American Marketing Association, Chicago, IL, 186-190.

Appendix

Affective commitment	I am loyal to this hotel. My relationship with this hotel is something I intend to maintain. I expect to continue to return to this hotel for a long time. I am committed to my relationship with this hotel.
Overall satisfaction	Describe your feelings about your overall experience with your last hotel stay. Dissatisfied/satisfied. Sad/happy. Uncomfortable/relaxed. Disgusted/contented. Exploited/rewarded.
Satisfaction with self-service technology	Describe your feelings about your experiences with self-service technologies during your last hotel stay. (For example, using the TV to check out or using the automatic room key dispenser). Sad/happy. Disgusted/contented. Displeased/pleased. Exploited/rewarded.
Satisfaction with personal service	Describe your feelings about your interactions with hotel staff during your last hotel stay. (For example, with reception staff or concierge). Dissatisfied/satisfied. Sad/happy. Uncomfortable/relaxed. Disgusted/contented. Displeased/pleased.
Social competency	I love to socialize. At social events, I enjoy talking to a large number of people. I am a 'people person'. I enjoy going to large social events and meeting new people.

Technology competency	I feel comfortable about using technology. I am not intimidated by technology. I feel at ease with technology. I feel comfortable with technology.
Preference for personal service	Face-to-face contact in providing services makes the process enjoyable. I like interacting with the person who provides the service. I like making conversation with the person who is providing the service. I have a preference for dealing with contact staff in service settings.
Preference for self-service technology	I think it is desirable to serve myself using technology. To provide my own service using self-service technologies is good. I am happy to complete transactions myself using technology. I choose self-service technologies more often than face-to-face service.

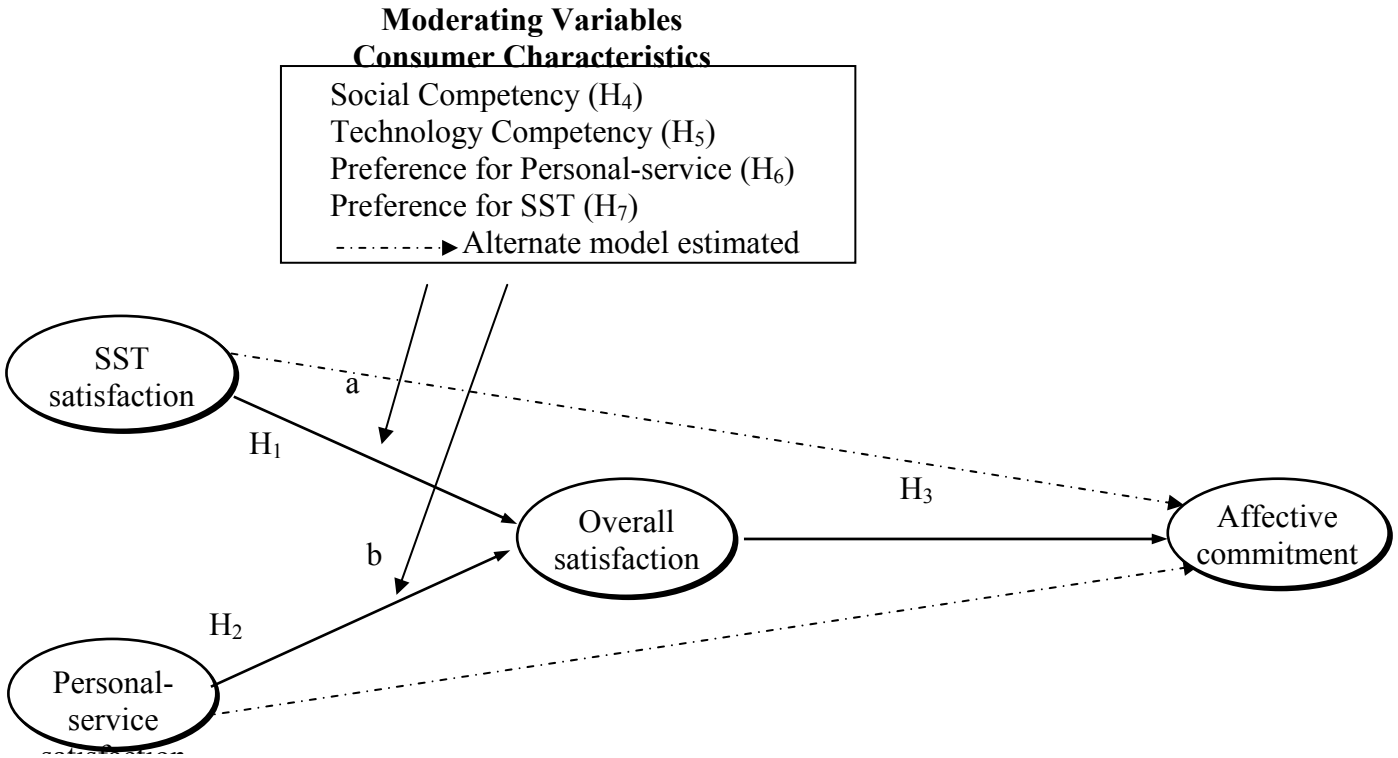

Figure 1.

Conceptual model

Age category	Queensland Visitor Survey	Present study
25-34	20.2%	19.7%
35-44	23.8%	24.6%
45-55	29.1%	34.0%

Table 1
Non-Response Bias

Construct	Number of items	Factor Loadings		Fit Statistics			
		Lowest	Highest	χ^2 (d.f., *p*-value)	GFI	AGFI	RMR
Affective commitment	4	0.75	0.85	1.056, 2 d.f; $p = 0.59$	0.99	0.99	0.01
Overall satisfaction	5	0.66	0.72	22.69; 5 d.f; $p = 0.001$	0.97	0.92	0.01
Satisfaction with SST	4	0.72	0.85	0.50;, 2 d.f; $p = 0.78$	0.99	0.99	0.00
Satisfaction with personal service	5	0.77	0.83	31.31; 5 d.f; $p = 0.001$	0.96	0.89	0.09
Preference for personal service	4	0.54	0.72	12.95;, 2 d.f; $p = 0.001$	0.98	0.91	0.02
Preference for SST	4	0.80	0.82	0.77; d.f., 2; $p = 0.68$	0.99	0.99	0.01
Social competency	4	0.75	0.90	1.60;, 2 d.f; $p = 0.450$	0.99	0.99	0.01
Technology competency	4	0.80	0.92	21.77;, 2 d.f; $p = 0.001$	0.98	0.89	0.02

Table 2

Construct Results

	1.	2.	3.	4.	5.	6.	7.	8.
1. Affective commitment	1.00							
2. Overall satisfaction	0.51	1.00						
3. Satisfaction with SST	0.24	0.47	1.00					
4. Satisfaction with personal service	0.45	0.77	0.47	1.00				
5. Preference for personal service	0.29	0.15	-0.08	0.14	1.00			
6. Preference for SST	-0.12	-0.07	0.13	-0.11	-0.52	1.00		
7. Social competency	0.21	0.76	0.06	0.14	0.47	-0.04	1.00	
8. Technology competency	-0.11	-0.05	0.13	-0.02	-0.19	0.56	0.03	1.00

Table 3
Construct Intercorrelations

	Initial model			Alternative model		
	Standard estimate	***t* value**	***p*-value**	**Standard estimate**	***t* value**	***p*-value**
Satisfaction with SST → Overall satisfaction (H1)	0.13	2.55	0.01	0.13	2.76	0.001
Satisfaction with personal service → Overall satisfaction (H2)	0.72	10.68	0.001	0.71	10.61	0.001
Overall satisfaction → Affective commitment (H3)	0.51	7.77	0.001	0.41	3.84	0.001
Satisfaction with SST → Affective Commitment				-0.02	-0.34	0.37
Satisfaction with personal service → Affective commitment				0.15	1.45	0.07

Table 4
Structural Model Results

Moderating variable	**Model**	χ^2	**df**	**GFI**	**CFI**	**RMR**	**RMSEA**	$\Delta\chi^2$	***p***
Social competency	A	759.55	300	0.75	0.91	0.08	0.107	20.72	0.05*
	B	738.83	295	0.76	0.91	0.06	0.106		
Technology competency	A	736.44	300	0.84	0.92	0.05	0.104	3.76	NS
	B	732.68	295	0.84	0.93	0.05	0.105		
Preference for SST	A	779.61	300	0.79	0.92	0.06	0.108	2.65	NS
	B	776.97	295	0.79	0.92	0.07	0.109		
Preference for personal service	A	757.84	300	0.77	0.91	0.06	0.106	2.95	NS
	B	754.89	295	0.77	0.91	0.06	0.107		

NS = non significant
* = significant

Table 5
Multigroup analysis

Table 6. Chi-Squared difference test

	Social Competency	
	High	**Low**
Personal-service satisfaction → Overall satisfaction	0.636 7.186	0.787 9.583
Self-service technology satisfaction → Overall satisfaction	0.047 0.618	0.221 3.577
Overall satisfaction →Affective commitment	0.541 4.487	0.165 0.789
Self-service technology satisfaction → Affective commitment	0.028 0.317	-0.006 -0.053
Personal-service satisfaction → Affective commitment	0.107 0.936	0.275 1.400